## AMENDMENTS TO THE CLAIMS

This listing of claims replaces all prior versions and listings of claims in the application.

- 1. (Previously Presented) A system for acquiring blood-vessel data, comprising:
- a data-gathering probe adapted to acquire blood-vessel data;
- a heart-monitoring device adapted to acquire heartbeat data;
- a device adapted to move said data-gathering probe through a blood vessel, wherein the data-gathering probe gathers data while being moved; and
- a data-gathering device connected to said data-gathering probe and said heartmonitoring device and adapted to:

acquire said heartbeat data;

identify a cyclical portion of said heartbeat data, said cyclical portion being substantially common to multiple sets of heartbeat data; and

acquire said blood-vessel data during an interval substantially corresponding to said cyclical portion of said heartbeat data, wherein the data-gathering device is adapted to acquire said blood-vessel data during the interval in response to a probetrigger marking a beginning of the cyclical portion.

- 2. (Canceled)
- 3. (Original) The system of claim 1, further comprising a catheter, said data-gathering probe being attached to a distal end of said catheter.
- 4. (Original) The system of claim 3, wherein said data-gathering probe comprises a plurality of transducers spaced circumferentially around said distal end of said catheter and adapted to receive at least said blood-vessel data.
- 5. (Original) The system of claim 3, wherein said data-gathering probe further comprises at least one transducer adapted to rotate and receive at least said blood-vessel data.
- 6. (Original) The system of claim 1, wherein said heart-monitoring device comprises an electrocardiograph (EKG) device.
- 7. (Original) The system of claim 1, wherein said data-gathering device comprises a programmable computing device.

- 8. (Original) The system of claim 1, wherein said data-gathering device comprises an intra-vascular ultrasound (IVUS) device.
- 9. (Original) The system of claim 7, wherein said data-gathering device further comprises an intra-vascular ultrasound (IVUS) device.
- 10. (Original) The system of claim 5, wherein said data-gathering device is further adapted to start acquiring said blood-vessel data when said at least one transducer is rotationally oriented in a predetermined position.
- 11. (Previously Presented) A system for acquiring blood-vessel data, comprising: a computing device adapted to be connected to a data-gathering probe and a heart-monitoring device;

a device adapted to move said data-gathering probe through a blood vessel, wherein the data-gathering probe gathers data while being moved; and

computer code operating on said computing device, said computer code being adapted to:

acquire heartbeat data from said heart-monitoring device; and

acquire blood-vessel data during an interval substantially corresponding to a cyclical portion of said heartbeat data, said cyclical portion being a commonly reoccurring portion of said heartbeat data, wherein the computing device is adapted to acquire said blood-vessel data during the interval in response to a probe-trigger marking a beginning of the cyclical portion.

- 12. (Previously Presented) The system of claim 11, wherein said computing device is further adapted to be connected to said data-gathering probe via an intra-vascular ultrasound (IVUS) device.
- 13. (Previously Presented) The system of claim 11, wherein said data-gathering probe is disposed on a distal end of a catheter having at least one transducer via an intravascular device.
- 14. (Previously Presented) The system of Clam 11, wherein said heart monitoring device comprises an electrocardiograph (EKG) device.
  - 15. (Canceled)

- 16. (Original) The system of claim 11, wherein said computer code is further adapted to transmit probe-triggering data during said interval, said probe-triggering data signifying a desire to acquire said blood-vessel data from said data-gathering probe.
- 17. (Previously Presented) The system of claim 11, wherein said computer code is further adapted to identify a rotational orientation of said data gathering probe.
- 18. (Previously Presented) The system of claim 11, wherein said computer code is further adapted to identify a speed at which said retraction device is moving said datagathering probe through said blood-vessel.
- 19. (Previously Presented) A method of acquiring blood-vessel data from a patient, comprising:

inserting a data-gathering probe into a blood vessel of a patient; connecting said data-gathering probe to a data-gathering device; attaching at least one heart-monitoring device to said patient; connecting said at least one heart-monitoring device to said data-gathering device; moving said data-gathering probe through said blood vessel, wherein said data-gathering probe gathers data while being moved;

acquiring heartbeat data from said at least one heart-monitoring device; identifying a cyclical portion of said heartbeat data that is substantially common to more than one set of heartbeat data; and

acquiring blood-vessel data from said data-gathering probe during an interval that substantially corresponds to said cyclical portion of said heartbeat data, wherein the acquiring step is performed during the interval in response to a probe-trigger marking a beginning of the cyclical portion.

## 20. (Canceled)

21. (Previously Presented) The method of claim 19, wherein said step of inserting a data-gathering probe into a blood vessel further comprises inserting a catheter into said blood vessel.

- 22. (Previously Presented) The method of claim 21, wherein said step of connecting said data-gathering probe to a data-gathering device further comprises connecting said catheter to an intra-vascular ultrasound (IVUS) device.
- 23. (Original) The method of claim 22, wherein said step of attaching at least one heart-monitoring device further comprises attaching an electrocardiograph (EKG) device to said patient.
- 24. (Previously Presented) The method of claim 23, wherein said step of connecting said at least one heart-monitoring device to said data-gathering device further comprises connecting said EKG device to a computing device connected to said IVUS device.
- 25. (Original) The method of claim 19, wherein said step of acquiring blood-vessel data further comprises receiving blood-vessel data from said data-gathering probe during said interval.
- 26. (Original) The method of claim 19, wherein said step of acquiring blood-vessel data further comprises continuously receiving blood-vessel data from said data-gathering probe and storing blood-vessel data during said interval.

## 27. (Canceled)

- 28. (Original) The method of claim 19, further comprising the step of rotating at least a portion of said data-gathering probe during the acquisition of said blood-vessel data.
- 29. (Original) The method of claim 28, wherein said step of acquiring blood-vessel data further comprises transmitting probe-triggering data at the beginning of said interval and receiving blood-vessel data from said data-gathering probe in response thereto.
- 30. (Original) The method of claim 28, wherein said step of acquiring blood-vessel data further comprises acquiring blood-vessel data during said interval and when said at least a portion of said data-gathering probe is rotationally oriented in a predetermined position.
  - 31. (Previously Presented) A method of acquiring blood-vessel data, comprising: inserting a data-gathering probe into a blood vessel of a patient; connecting said data-gathering probe to a data-gathering device;

attaching at least one heart-monitoring device to said patient;
connecting said at least one heart-monitoring device to said data-gathering device;
moving said data-gathering probe through said blood vessel, wherein the datagathering probe gathers data while being moved;

acquiring heartbeat data from said at least one heart-monitoring device over multiple heart cycles;

identifying a cyclical portion of said heartbeat data; and substantially synchronizing acquiring multiple sets of blood-vessel data to the cyclical portion of the heartbeat data, wherein the acquiring is performed during an interval in response to a probe-trigger marking a beginning of the cyclical portion.

- 32. (Original) The method of claim 31, wherein said step of inserting a data-gathering probe further comprises inserting a catheter having at least one transducer into said blood vessel of said patient.
- 33. (Previously Presented) The method of claim 31, wherein said step of connecting said data-gathering probe to a data-gathering device further comprises connecting a catheter having at least one transducer to an intra-vascular ultrasound (IVUS) device.
- 34. (Previously Presented) The method of claim 31, wherein said step of connecting said at least one heart-monitoring device to said data-gathering device further comprises connecting at least one electrocardiograph (EKG) to a computing device, said computing device further being connected to an intra-vascular ultrasound (IVUS) device.
- 35. (Original) The method of claim 32, further comprising the step of identifying a rotational orientation of said at least one transducer.
- 36. (Original) The method of claim 35, wherein said step of substantially synchronizing the acquisition of multiple sets of blood-vessel data to cyclical portions of said multiple sets of heartbeat data further comprises commencing the acquisition of each set of blood-vessel data when said transducer is rotationally oriented in a particular position.
- 37. (Original) The method of claim 31, further comprising tracking the movement of said data-gathering probe through said blood vessel.

## 38. (Canceled)

39. (Previously Presented) A method for gated acquisition of intra-vascular ultrasound (IVUS) data, comprising the steps of:

monitoring a physiological signal of a patient, where the physiological signal correlates with a cardiac cycle for the patient;

advancing an IVUS catheter to a region of interest within a coronary artery; moving the catheter; and

acquiring data while the catheter is moved, wherein the acquiring is performed during an interval in response to a probe-trigger marking a particular point in the cardiac cycle.

- 40. (Original) The method of claim 39, wherein said IVUS catheter further comprises a rotating transducer.
- 41. (Original) The method of claim 39, wherein said IVUS catheter further comprises an array of transducers.
- 42. (Previously Presented) The system of Claim 1, wherein the device adapted to move said data-gathering probe through a blood vessel comprises a retraction device.
- 43. (Previously Presented) The system of Claim 11, wherein the device adapted to move said at least one data-gathering probe through a blood vessel comprises a retraction device.
- 44. (Previously Presented) The method of Claim 39 wherein moving the catheter comprises initiating a pullback of the catheter.
- 45. (Previously Presented) The method of Claim 39, wherein acquiring data is performed while the catheter is pulled back.
- 46. (Previously Presented) The system of Claim 11, wherein said data-gathering probe comprises at least one transducer.
- 47. (Withdrawn) The system of claim 1, wherein said data-gathering device comprises an optical device.